

1.0 The Proposed Danger Point Trail Reconstruction Project

The proposed *Danger Point Trail Reconstruction Project* would extend an existing $\pm 6'$ -wide gravel trail in the community of Angoon, Alaska. The *existing* 6'-wide section of gravel trail starts in the vicinity of the Orthodox Russian Church and runs about $\frac{1}{2}$ -mile to the northwest of the community, terminating at the community's cemetery site. An additional $\frac{1}{2}$ -mile section of existing undeveloped path continues to Danger Point. The proposed, '*new*' trail would reconstruct the existing footpath to Danger Point Peninsula by expanding it to a 6'-wide pedestrian trail, for a total trail length of one mile. There is consideration of interpretive signs and resting benches along the way. **Figure 1**, below, shows the section of trail/path proposed for reconstruction, relative to the existing 6'-wide gravel trail and the City of Angoon.



Figure 1 – Proposed Danger Point Trail Reconstruction

The proposed trail reconstruction would create a 6'-wide gravel trail, similar to the existing 6'-wide portion of the Danger Point Trail shown in **Figure 2**. Although a 60'-wide right-of-way (ROW) is planned, minimal clearing would be performed in order to preserve the native environment, including the forest canopy. The pathway/trail alignment shown in **Figure 1** was selected and marked in 2014 by members of the Angoon community and surveyed later that same year. The community members, and their technical engineering consultant at that time, were attempting to follow the historic path, while selecting a trail alignment that minimized construction issues (pocket wetlands, steep slopes, patches of emergent bedrock, cut banks, etc.) and maximized accessibility. Those 'trailblazers' also suggested a 60' ROW in order to allow the future construction effort a reasonable amount of leeway in the *exact* placement of the trail, to avoid individual trees or other small localized construction impediment, such as a boulder and any sensitive cultural/historic sites.



Figure 2 – Existing Danger Point Trail

2.0 Purpose and Need for the Project

The City of Angoon has no sidewalks and most of the roadways within the community do not have ROW's wide enough to support sidewalks. The most well-used route for walking and exercising for Angoon residents is along the edge of the roadway running between the City and the State-operated ferry terminal. This road, like the rest of the roadways in Angoon, has no accommodations for pedestrian traffic or pedestrian safety (sidewalks, parallel trail, etc.). While the land adjacent to much of the length of the 'ferry terminal road' is undeveloped, it is not a typically natural setting, as the clearing of the wide road right-of-way breaks the forest canopy and allows a 'wall' of dense brush to grow-up, separating pedestrians from the native forests beyond.

In addition to the lack of areas to safely exercise, the residents of Angoon have very little convenient, safe pedestrian access to the surrounding forested environment, that does not require a boat. This limits community member's opportunities to learn and interact with the natural surroundings, and to participate in cultural and subsistence activities.

The existing 6'-wide ½-mile portion of Danger Point Trail, from the City of Angoon to their cemetery site (U.S. Survey 1800) as shown in **Figure 1**, is the only formal, maintained trail in a community surrounded on all side by the Tongass National Forest, Admiralty Island National Monument and the Kootznoowoo Wilderness area.

The City of Angoon is working with the U.S. Forest Service (USFS) to explore reconstruction of the last ½-mile portion of the trail to Danger Point, allowing access to beach areas along the southwest coast of the Danger Point peninsula and the Danger Point Lighthouse Reserve area at the peninsula's northern most tip.

This proposed new section of the Danger Point Trail would:

- Greatly increase opportunities for outdoor exercising and wellness activities (walking, jogging, bicycling, etc.) for the residents of Angoon.
- Allow for safer, easier interaction with the natural environment for both recreational and educational purposes. This benefit of the trail is especially important to the community, as it would allow for both elders and the very young to interact with nature together and help teach traditional knowledge and values to the next generation.
- Provide increased access to traditional and modern "way of life" and subsistence resource areas used by the community.
- Provide a trail for guided and self-guided tourism and economic benefit, that includes interpretive cultural and historic information.
- Provide access to public lands.

It should be noted the proposed trail construction, and any associated improvements, stop short of the federally owned '*U.S. Lighthouse Reserve at Danger Point*' (U.S. Survey 1613). Lighthouse withdrawals are cooperatively managed under a Memorandum of Understanding (MOU) between the U.S. Forest Service and US Coast Guard.

3.0 General Community and Project Site Information

3.1 The Project Location

The City of Angoon, Alaska, is a 2nd Class City of about 400 people, located approximately 55 miles southwest of Juneau, in Section 25, Township 50 South, Range 67 East (Copper River Meridian). **Figure 3**, below, shows the community's location, relative to the rest of the state.

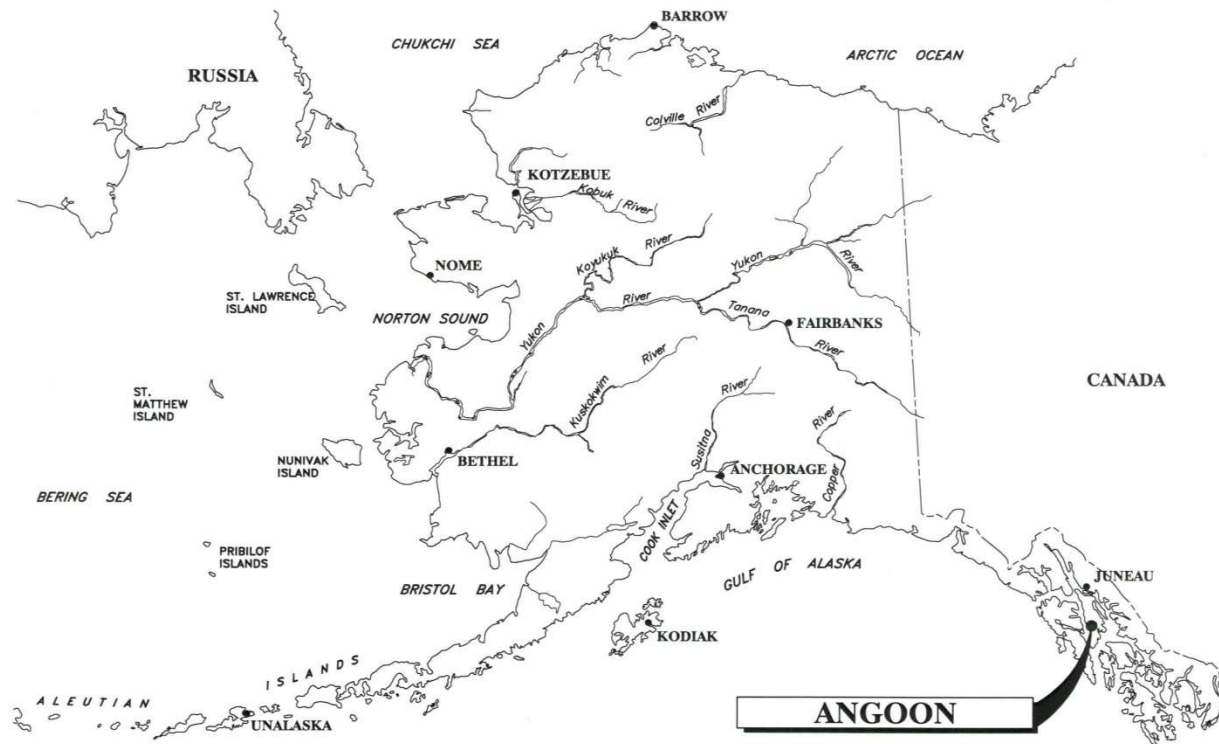


Figure 3 – Angoon's Location within Alaska

Figure 4 (next page) shows Angoon's immediate vicinity. Angoon is the only permanent settlement on Admiralty Island, and is only accessible by plane or boat. The community has a state-owned seaplane base, but currently has no land-based airstrip. During the winter months, the seas near Admiralty Island often become rough (due to strong north winds) limiting the use of floatplanes. The Alaska Dept. of Transportation & Public Facilities (AKDOT&PF) is presently in the planning stages of an airport/airstrip project for Angoon. Boat traffic utilizes the community's small boat harbor (45 berths) or the state-owned ferry terminal.



Figure 4 - Angoon Area Map

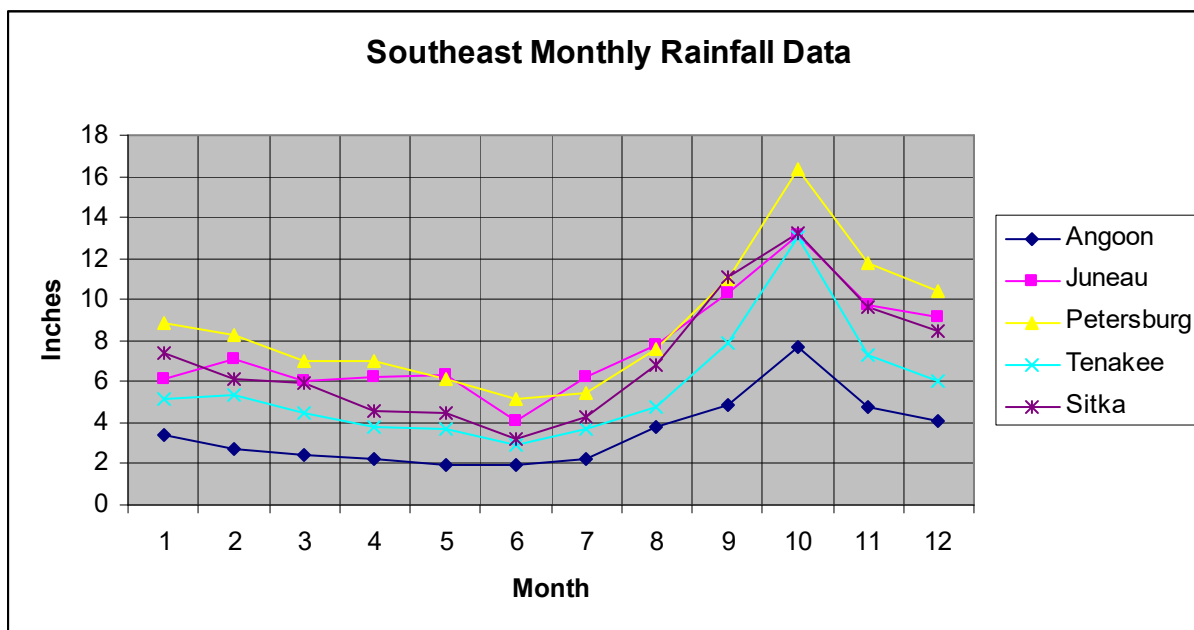
3.2 Local Climate Data

Due in part to its coastal location, Angoon experiences relatively cool summer temperatures (45°F-60°F), and fairly mild winter temperatures (25°F-40°F). The Angoon area receives about 42 inches of total precipitation annually (including approximately 61" of snowfall each year), which is considerably less than is typical for most of Southeast Alaska.

The table and chart on the following page summarizes Angoon's climate data and show Angoon's monthly rainfall data as compared to other southeastern Alaskan communities.

Angoon Climate Data

Parameter	Value
Mean Annual Precipitation	42"
Wettest month [average/record precipitation]	October [7.71"/47.38" in 1982]
Mean Annual Snowfall, inches	61
Highest monthly snowfall [average/record]	January [16.6"/49.8" in 1952]
Mean Annual Temperature (°F)	42.3
Record High Temperature (°F) [date]	82 [06/26/1970]
Record Low Temperature (°F) [date]	-7 [02/01/1968]
Annual Heating Degree Days (base 65°F)	8,284
SOURCE – Western Regional Climate Center website [Angoon records from 1949 to 2011]	



Rainfall Data from Western Regional Climate Center website

3.3 Soils & Topography

The geology of Admiralty Island was mapped by the US Geological Survey in 1965 (Latham, et al.). Admiralty Island consists of sedimentary, metamorphic, and igneous rock from the Silurian to Quaternary period. During the Pleistocene period, the area was covered with glaciers to a height of 3,000 feet. The bedrock in the vicinity of Angoon has been identified as part of the Gambier Bay Formation. The bedrock is primarily schist with thick lenses of marble from the middle Devonian era. As a result of post-glacial isostatic rebound, western portions of the island have uplifted at least 300 feet.

The soils in the immediate vicinity of the Angoon community are shallow, with hard bedrock¹ found all the way up to the ground surface (although it is generally around 2'-6' deep). However, in low-lying, boggy areas organic peat thicknesses can exceed 8'-10' in depth.

Angoon has a hard-rock material source located on the local road system. Rock from this site has been crushed & screened for use as gravel material for previous local projects, including the existing portion of the Danger Point Trail. More information regarding this material source is provide in Section 3.5, below.

Although much of the developed community of Angoon is built on a relatively narrow, flat 'saddle' of ground connecting the Danger Point peninsula to the rest of Admiralty Island (see **Figure 5**), the topography of the area is mostly hilly. The Danger Point Peninsula, northwest of Angoon, generally rises away from the water fairly steeply, toward the center of the peninsula, and flattens-out on top. The topography of ground between the waterline and the central 'plateau' of the peninsula is not a smooth, even surface, but is instead punctuated by small ridges/valleys landforms radiating outward from the higher, flatter top of the peninsula. These valleys/drainages become less defined as one moves away from the coast and toward the center of the peninsula.



Figure 5 – Angoon & Danger Point Peninsula

3.4 Hydrology

The Danger Point peninsula has no year-round streams or creeks along its southwestern shore (the project area). The shallow bedrock, organic-rich spongy soils, and small watershed areas allow precipitation to either soak into the soils, or quickly runoff. A trail along southeastern shore, between the community's cemetery site (U.S. Survey 1800) and northern end of the peninsula, would cross as many as a dozen small seasonal 'drainages', similar to the one shown in **Figure 6**. **Figure 6** shows two drainage structures along the *existing* portion of the trail, between the cemetery and the community (not part of this project). As

¹ The local bedrock is not "rippable" with standard construction equipment and would most likely require blasting to remove. Limited leveling of emergent bedrock along the trail may be possible using a jackhammer.

you would expect, these drainages become smaller and less defined as you move uphill and toward the center of the peninsula.



Figure 6 – Existing Danger Point Trail – Typical Drainages and Drainage Structures
Left – Small Trail Culvert; *Right* – Trail Built Over Small Log Bridge Structure

3.5 Project and Adjacent Lands Ownership

Land ownership along the Danger Point peninsula is a mix of City of Angoon, Kootznoowoo Corp. (the ANCSA Village Corporation for Angoon), private ownership and federal lands. The proposed new trail reconstruction project would be built exclusively on properties owned by Kootznoowoo Corp., including; Plat 96-487, Sec. 506 Kootznoowoo Remainder, ANCSA 14(c) Plat 2008-35, Tract X and U.S. Survey 1800 (the community's cemetery site).

While the project would be constructed on the community's Village Corporation lands, it should also be noted that the City of Angoon is sited within the Tongass National Forest, Admiralty Island National Monument and the Kootznoowoo Wilderness area. Additionally, the proposed project would terminate near (but not 'on') the federally-owned Danger Point Lighthouse Withdrawal U.S.S. 1613.

3.6 Biological Project Setting

As seen in the **Figure 2** and **6** photographs, and the **Figure 1** and **5** aerial photos, the existing vegetation on the Danger Point peninsula consists almost uniformly of dense spruce-hemlock forest, with sparse underbrush growth limited by the dense tree canopy. This is typical for the region, in areas where no development has taken place. In almost all developed areas (and their connecting roadways, utility corridors, etc.) the dense forest canopy has been removed, allowing dense underbrush growth, which is usually managed &/or maintained. **Figure 7** shows the National Wetlands Mapping for the Danger Point project area, describing the peninsula as herbaceous riparian habitat.

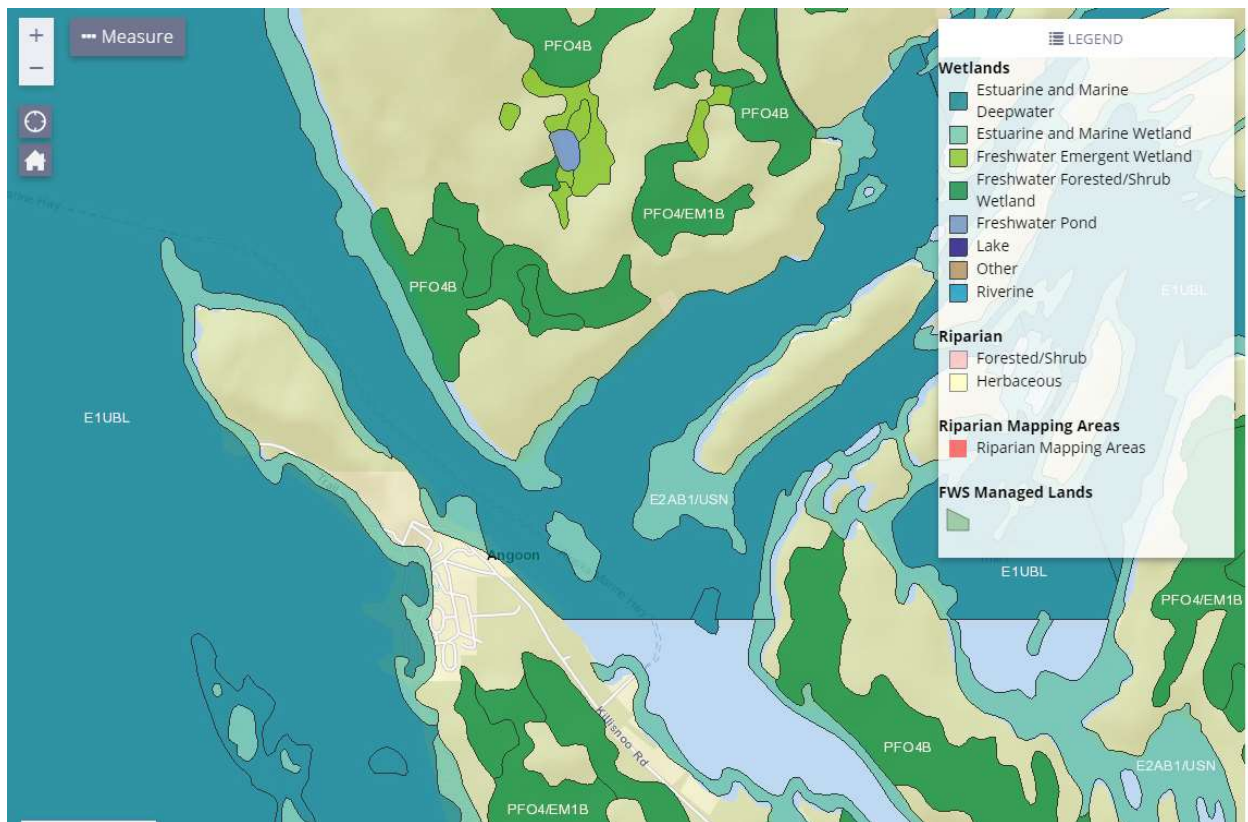


Figure 7 – National Wetlands Mapping of the Danger Point Peninsula

The spruce-hemlock forests of Admiralty Island provide habitat for mammals as large as brown bear and Sitka black-tailed deer, and as small as squirrel and ermine. Birds from warblers and sparrows up to ravens and bald eagles can be found on Admiralty Island. Admiralty Island is noted as having one of the highest concentrations of nesting bald eagles in the world. Along the coast, and in the waters offshore, seals, sea lions, porpoise and humpback whales have been observed. All of these species have been seen on or near the Danger Point project area.

On-line section 7(c) consultation with the U.S. Fish and Wildlife Service (USFWS) indicates no endangered species, nor critical habitat, are known to occur within the proposed project area.

3.7 Cultural Resources

In October 2020, an on-site *Archaeological & Historic Resources Survey* of the project area was performed by Stephan R. Braund & Associates (SRB&A), in support of the U.S. Forest Service's National Environmental Policy Act (NEPA) Environmental Assessment (EA) for this -mile trail reconstruction project. A report detailing the results of SRB&A's literature review, field investigations and analysis indicates that there are no historic properties or Alaska Heritage Resource Survey (AHRS) sites *directly* impacted by the proposed trail reconstruction project. However, the report also noted that the increased access provided by the newly reconstructed section of trail could potentially lead to inadvertent erosion and trampling (an *indirect* and *negative* impact) on a cultural resource site located in the vicinity of the trail.

Based on their findings, SRB&A has recommended that the USFS make a determination of “adverse effect” for the proposed trail project and consult with SHPO regarding methods to avoid, minimize, or mitigate these potential adverse effects.

SRB&A further notes that, should construction unearth any previously unknown archaeological or historic materials (including human remains), the construction in the vicinity should be halted immediately and the USFS notified, to avoid damaging potentially important cultural resources, until the site can be properly evaluated and documented.

4.0 Proposed Project Construction

4.1 General Construction Methodology

The gravel for the proposed Danger Point Trail reconstruction project will be produced at the local gravel source or barged to Angoon. In either case, the gravel will be stockpiled at the local gravel pit. Gravel material with a maximum size of $\pm 1\frac{1}{2}$ " is suitable for this project. This gravel will be transported through the community in standard dump trucks (5-10 yard) and a smaller stockpile will be established at the trailhead of the *existing* portion of trail, at its southern end, in Angoon. A similar staging point was used to construct the existing portion of the Danger Point Trail. Since standard dump trucks cannot travel the existing section of the trail (from Angoon to the cemetery site), the head of the *existing* trail is closest practicable² staging point for the *new trail* gravel material.

From the small stockpile at the head of the *existing* 6'-wide trail, gravel will be transported to the working end of the trail reconstruction project via ATV's featuring a small dump bed or using a tow-behind trailer, similar to those shown in **Figure 8**, below.



Figure 8 – ATV-based Gravel Transporters

Left – Kubota RTV 900 w/ Dump Bed; Right – ATV Trailer w/ Dump Bed

The use of relatively small (and therefore less efficient) gravel transportation vehicles is necessary in order to travel back-and-forth along the narrow (6'-wide) travelway, and to minimize the amount of brushing and tree removal necessary for the project. Minimizing disturbance to the surrounding environment, especially the existing forest canopy, is an integral aspect of this trail's development.

The newly reconstructed trail will feature several (± 5) wider section of trail, spaced at approximate 500' intervals. During construction, these will be employed as '*pull-out*' areas to allow construction ATV's to pass each other. Short-range radios (or similar) will be used by the gravel ATV drivers, to coordinate passing. After construction, these widened areas will be used for benches, interpretive signage &/or other

² It should be noted that even *if* the existing trail *could* support a loaded standard dump truck, the beginning of this new section of Danger Point Trail is the community's cemetery site. The cemetery site is nearing its capacity, so staging and stockpiling material in a respectful manner would be extremely problematic. The relatively large turning-radius of a standard dump truck would also be problematic.

trail appurtenances. These widened areas would be approximately 25'-35' long and $\pm 10'$ -12' wide (depending on the exact type of gravel conveyance used)³.

Loading of the ATV beds & or trailers would be accomplished using a small excavator, similar to the one shown in **Figure 9**.

Gravel for the trail will be placed directly on the existing grade. The trail centerline will be cut and brushed to a width of 10'-12'. The ground *directly* beneath the gravel trail will also be cleared of any large tree/brush root masses. Prior to placement of the gravel, the existing ground will be compacted using a 'jumping jack' compactor (as shown in **Figure 10**, or similar). The gravel off-loaded at the working end of the trail will be hand-placed using rakes & shovels or moved into position using a small skid-steer ('bobcat') vehicle, and compacted. The trail's



Figure 10 – 'Jumping Jack' Compactor

gravel thickness will typically be $\pm 12''$, however, the compaction of the existing grade prior to the gravel placement should result in the trail's surface being between 3"-9" above the surrounding terrain. Some areas of the trail may be considerably thicker than the typical 12"-thickness, in order to create a relatively smooth walking surface and/or to provide a minimum amount of cover over drainage culverts.

As noted in Section **3.4 Hydrology**, there are no permanent streams or waterways crossed by the proposed project trail. Small pipe culverts or bridge structures similar to those along the *existing* portion of the trail (and shown in **Figure 6**) would be constructed at low-points and seasonal drainages along the new trail extension. The exact location and number of these drainage will be determined in the field.

The trail will remain within the proposed 60'-wide R.O.W., but may vary from the exact center of the R.O.W. in order to avoid/minimize the removal of trees, and to allow for the selection of a trail alignment that will accommodate elderly and young users.

As noted above, several areas of the trail will be widened for short stretches, to allow for construction vehicles to pass each other. These pull-out areas will be selected by the community, based on their permanent, long-term use as rest areas and interpretive sites along the trail.



Figure 9 – Mini-Excavator, for Loading Gravel into ATV's &/or Trailers

³ Side-by-side ATV's (with dump beds) would require a *wider, but shorter* pull-out than standard ATV's, but standard ATV's, with gravel trailers, would require a *longer, but narrower* pull-out area.

4.2 Construction Materials (Gravel) Source

Angoon's current gravel/material source is located on the east side of the road servicing the community's water treatment plant. This is a rock quarry site, where gravel material can be produced by crushing and screening mass-rock to a suitable size (in this case 1½" or smaller). A 2012 geotechnical investigation collected gravel samples from this material source (debris and remainder from previous projects) in order to test the gravel for use as road/trail-building material. The material tested met Alaska Department of Transportation & Public Facilities (AKDOT&PF) standards for 'LA Abrasion' resistance (AASHTO T 96), and Sodium Sulfate Loss (AASHTO T 104), but failed to meet Degradation of Aggregate (ATM 313) limits. ATM 313 tests a material's resistance to breaking down into fine particles in the presence of water, under cyclic loading. While the material at the presently active Angoon material site is not ideal for road building, it is suitable for a pedestrian trail (even assuming limited small vehicle traffic, for trail maintenance).

The community does not presently own a crusher &/or screen and must therefore lease and ship this equipment to the site for each project. For smaller projects, it may be less expensive to barge gravel material to Angoon, versus the lease, mobilization and demobilization costs associated with mining and processing rock material from the local source.